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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Arguments

1. In response to the 112, 1st paragraph rejection of claims 25-49 as failing to comply with the enablement requirement, the applicant has made the following assumptions.

- First, the water vapor partial pressure PWSn of the anode gas calculated on the basis of the temperature of the fuel cell stack means that PWSn is determined from a saturated water vapor pressure which is dependent on a temperature of the fuel cell.
- Second, when a fuel cell is operative, there is an inverted water diffusion from the cathode side to the anode side. The moisture resulting from this inverted water diffusion saturates the anode gas passage with water vapor, except in the vicinity of the inlet of the anode gas passage.
- Third, where the electrolyte membrane creates a relatively small inverted water diffusion and where an anode effluent discharged from the anode gas passage outlet of a fuel cell stack is recirculated into the anode gas passage inlet, gas components other than water vapor in the anode gas effluent take a minimum value at the anode gas passage outlet and in a stable state operation, the anode gas is saturated with water vapor. As a result, the water vapor partial pressure is substantially equal to the saturated water vapor pressure, which can be estimated from the temperature of the fuel cell.

In response, the applicant's arguments filed on 2/26/10 have been fully considered but they are not persuasive for the following reasons.

While the examiner agrees with the applicant that one skilled in the art at the time of the invention would know that the saturated water vapor pressure is dependent on the temperature of the gas in the fuel cell, there is no evidence to support the argument that the water vapor partial pressure PWSn in the anode gas is substantially equivalent to the saturated water vapor pressure. Upon careful inspection of the specification of the present application, the examiner has determined that there is no disclosure of the water vapor partial pressure being substantially equivalent to the saturated water vapor pressure. Without knowing the water vapor partial pressure PWSn, the map shown in Figure 5 cannot be generated. In addition, the examiner would like to point out the fact that the purge valve discharges the anode effluent which includes water vapor to the outside environment. Therefore, the anode gas is not necessarily saturated with water vapor because of the purging process.

Even assuming that the water vapor partial pressure PWSn is substantially equivalent to the saturated water vapor pressure, the generated energy EDH2n still cannot be determined because there is no explanation as to how the map shown in Figure 6 is generated. Specifically, there is no explanation on what variables were measured, what mathematical equation was used to calculate the generated energy EDH2n, and what the fuel cell operating conditions were used to generate the map. As previously discussed in the final rejection, the specification does not disclose that the generated energy EDH2n of the fuel cell stack is equivalent to the output power of the

fuel cell stack or that this value can be measured. In addition, there are also no units for the generated energy EDH2n which leads to some uncertainty as to how the map was generated.

In conclusion, the examiner maintains the contention that one of ordinary skill in the art would not be able to generate the maps shown in Figures 5 and 6 which are necessary to calculate a first energy loss and a second energy loss.

TC

/Jonathan Crepeau/
Primary Examiner, Art Unit 1795